

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
Application for International Broadcast)	IHF-LIC-20200710-00002
Station License)	IHF-C/P-20170417-00002
)	

INFORMAL OBJECTION

This informal objection is filed pursuant to Section §73.3587 International Broadcast Station License of Commission Rules, by Shortwave Solutions LLC (“Objector”) regarding an Application for International Broadcast License (“License Application”) by Turms Tech LLC (“Turms”).

Reference is made to the underlying Application for Authority to Construct an International Broadcast Station (“Permit Application”), file number IHF-C/P-20170417-00002, and Commission’s grant thereof (“Construction Authorization”).

Objector’s argument follows:

- 1) Permit Application (and thus License Application to cover it) are defective
- 2) Part 73 Subpart F (“International Broadcast”) only allows transmissions to the general public
- 3) Turms has burden of proof of “public interest” with regard to the “data broadcasting” contemplated in its Application

Defect: Incorrect Coordinates

Permit Application¹, Construction Authorization and License Application² all specify coordinates of the antenna at N40°51’40.4" W73°55’23.5” – in Upper Manhattan. Station appears to have been constructed at the different coordinates: N40°57’40.4" W73°55’23.5”, over 6 miles away.³ Turms did not specify ASR, which could have assisted Commission in identifying the inconsistency.⁴

Commission rulings are unclear whether major coordinate error in construction permit can be cured *nunc-pro-tunc* prior to application for license in the International HF Broadcast Service.⁵

¹ Permit Application, Form 309, Section V-G, Box 1 (“Antenna Coordinates”) at document p. 7

² License Application, Form 310, Box 2

³ Correct coordinates were listed on Permit Application, Section V, Box 3 (“Transmitter Coordinates”)

⁴ Cf. *Roman Catholic Diocese of Portland*, 29 FCC Rcd 15068 (2014)

⁵ See, e.g. *Salzer v. FCC*, 778 F.2d 869, 875-76 (D.C. Cir. 1985), *Km Radio of St. Johns*, 19 FCC Rcd 5847 (2004), *Chinese Voice of Golden City* DA 20-75

Defects: Inadequate Equipment for Power Required

Commission Rules for International HF Broadcast Stations require minimum 10kW “mean power”.⁶ It should be noted that for DRM modulation, “peak to average power ratio” (PAPR)⁷ is over 10:1, resulting in “peak power” requirement of 100kW.

Every components of transmission system proposed by Turms (coaxial line, amplifier and antenna) is under-rated and inadequate to meet the minimum power requirements:

- Transmission line is described as LDF4-50A. Per manufacturer datasheet filed⁸, it is rated for 40kW peak power, while 100kW peak power would be expected for DRM. Exceeding the cable peak power rating by a factor of 2.5 is likely to lead to jacket arcing and will constitute a safety hazard.⁹
- In addition, at the proposed 15Mhz transmission frequency, transmission line is rated for 9.52kW mean power,¹⁰ below 10kW required. Exceeding the cable mean power rating is poor engineering practice, will lead to excessive heating and may be a fire code violation.
- Per datasheet of antenna manufacturer¹¹, antenna is rated for 3kW mean power, vs 10kW required.
- Per datasheet of amplifier manufacturer¹², VRT DRM ICON amplifier is rated at 10kW power. While datasheet does not specify whether it is mean or peak, the dimensions of each 2kW module shown in datasheet are common for “peak” power ratings. No other information is available online for this amplifier, and manufacturer website has been “under construction” since 2017.¹³
- Turms did not file an exhibit of “*complete technical description of the transmitter(s) and auxiliary equipment with functional (block) diagram [..]*” required in Form 309, Section V, Box 5 (“Transmitting Apparatus”).¹⁴ Critically, this omits the manufacturer/model of DRM modulator.

Defects: Antenna

Form 309 filed by Turms is inconsistent with the Exhibits filed in support of same form.

- Form 309, Section V, Box 7(b) describes the antenna as “6 element Yagi”, whereas manufacturer datasheet in Exhibit E-8, describes it as 4-element antenna.¹⁵
- Form 309, Section V, Box 7(b) and Exhibit E-5 show a single antenna. However, construction drawings in Exhibit E-9 show two antennas.
- Form 309, Section V, Box 7(b), and the field patterns and gain figures filed as Exhibit E-6 claim gain between 16.8 and 19 dBi. However, manufacturers’ own datasheet, per Exhibit E-

⁶ § 73.751 (c)

⁷ DRM Handbook, Section 9.2.4 at page 44, available at <https://www.drm.org/wp-content/uploads/2019/02/DRM-Handbook.pdf>

⁸ Permit Application, Exhibit E-6, at document page 26

⁹ See, e.g. <https://www.microwaves101.com/encyclopedias/coax-power-handling>

¹⁰ Permit Application, Exhibit E-6, at document page 28, geometric interpolation between 10 and 20Mhz values listed

¹¹ Permit Application, Exhibit E-8, at document page 34

¹² Permit Application, Exhibit E-7, at document page 31

¹³ <https://www.vtesrl.it> and <https://web.archive.org/web/20170618061201/http://www.vtesrl.it/VTE/Welcome.html>

¹⁴ VRL amplifier is not type “for which data has been filed with FCC” and transmitter is composite.

¹⁵ Permit Application, Exhibit E-8, at document page 34

8, shows gain between 8.2 and 9.8 dBi¹⁶: a discrepancy of 8-9 dB. Even assuming transmitter uses two antennas concurrently, it only explains 3 dB of this discrepancy.

- It should be noted that § 73.753 requires 10x ratio between gain in intended direction vs average gain in horizontal plane. Exhibit E-6 does not quantify this value, and the proposed antenna is likely to fall short of requirements.

Technical Qualifications

Because of sheer number of obvious inconsistencies between Form 309 and exhibits filed in support thereof, Commission may find that Turms is not “[...] *technically and financially qualified and possesses adequate technical facilities to carry forward the service proposed*”, as required by § 73.731 (a)(4) and § 1.945(c)(2) of Rules.

International Broadcast

Turms’s program plans are described as “*Broadcast of financial, economic news and data through distribution of programs generally prepared on the basis of requests by clients*”.¹⁷

Due to location and orientation of antenna, it appears that Turms is planning to transmit financial data¹⁸ using “datacasting” feature of DRM, like recent application by Parable Broadcasting in Illinois¹⁹. Turms does not explicitly describe whether such programming is “broadcast to general public” or effectively a point-to-point service as a “multiplex” carrier of other programming.

It is well-established that “broadcasting” only includes transmissions intended to, and received by, the general public. Any other use constitutes “ancillary” or “auxiliary” service. Specifically, in case of this Application, § 73.701(a) defines “*International broadcast station*” as “[...] *transmissions of which are intended to be received directly by the general public in foreign countries*”.

The “datacasting” is permitted in §73.758. This paragraph was added by *Report and Order, FCC 05-70*, in ET Docket 04-139. Review of this docket shows that it was intended to harmonize FCC Rules with decisions of WRC-03 conference, such as digital modulation in HF bands. In this docket, only the final R&O mentions “datacasting”, and the §73 of that R&O states: “*We also observe that there is a datacasting standard for DRM, which will permit FCC-licensed international broadcasters to offer wide-area datacasting as well as high quality audio broadcasting*”.

What constitutes “broadcast” and “non-broadcast” communications was a matter of argument since passage of the Communications Act of 1934,^{20 21} and has been heavily argued in all proceedings authorizing “subcarrier” or “multiplex” communications:

- FM multiplex and Subsidiary Communications Authority ²²

¹⁶ Permit Application, at document page 34, note frequency is given as wavelength

¹⁷ Permit Application, Exhibit 2, at document page 9

¹⁸ See, e.g. <https://sniperinmahwah.wordpress.com/2018/07/13/shortwave-trading-part-iii-fourth-chicago-site-east-coast-patent-regulation-and-farmer-kevin-mystery/>

¹⁹ FCC File IHF-C/P-20200427-00001, Objections and Reply.

²⁰ *Scroggin & Co*, 1 FCC 194 (1935), *Bremer Broadcasting Company*, 2 FCC 79 (1935), *Muzak Corporation*, 8 FCC 581 (1941), *Functional Music v FCC*, 274 F. 2d 254 (C.A.D.C, 1958)

²¹ Illuminating historical overview is included in pages 146-157 of John H. Works Jr., *Pirates Walk the Plank: The Unauthorized Interception of Pay Television Transmissions*, 4 Hastings Comm. & Ent. L. J. 141 (1981), available at https://repository.uchastings.edu/hastings_comm_ent_law_journal/vol4/iss1/5

²² FCC 55-340 (1956), FCC 74-367 (1974), FCC 84-187 (1984), FCC 86-211 (1986)

- AM subcarrier authority ²³
- DTV ancillary/supplemental use authority ²⁴

Certainly, if the Commission has intended to permit non-broadcast use for International HF Broadcast, it would have stated so explicitly, as it has done in every other case stemming from above proceedings), such as altering “Table of Frequency Allocations” (§2.106) where such use was permitted, for example:

- *NG5 In the band 535-1705 kHz, AM broadcast licensees and permittees may use their AM carrier on a secondary basis to transmit signals intended for both broadcast and non-broadcast purposes. In the band 88-108 MHz, FM broadcast licensees and permittees are permitted to use subcarriers on a secondary basis to transmit signals intended for both broadcast and non-broadcast purposes. In the bands 54-72, 76-88, 174-216, 470-608, and 614-698 MHz, TV broadcast licensees and permittees are permitted to use subcarriers on a secondary basis for both broadcast and non-broadcast purposes.*
- *NG14 TV broadcast stations authorized to operate in the bands 54-72, 76-88, 174-216, 470-608, and 614-698 MHz may use a portion of the television vertical blanking interval for the transmission of telecommunications signals [..]*
- *NG149 The bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-512 MHz, 512-608 MHz, and 614-698 MHz are also allocated to the fixed service to permit subscription television operations in accordance with 47 CFR part 73 [..]*

No such footnote appears for frequencies allocated to International HF Broadcasting Service.

In a recent R&O²⁵ related to ancillary services to be provided by TV broadcasters, “*The Commission has determined that the definition of “broadcasting” in the Act applies to services intended to be received by an indiscriminate public and has identified three indicia of a lack of such intent: (1) the service is not receivable on conventional television sets and requires a licensee or programmer-provided special antennae and/or signal converter so the signal can be received in the home; (2) the programming is encrypted in a way that “makes it unusable by the public” and that is not “enjoyable without the aid of decoders”; and (3) the provider and the viewer are engaged in a private contractual relationship*”.

Substituting television for radio, this clearly applies here: other words, “datacasting” in § 73.758 permits arbitrary data, yet it still has to have the three indicia of “broadcast”: non-proprietary decoder, unencrypted and not require contractual relationship.

Burden of Proof and Further Inquiry

Turns bears the burden of showing the public interest by preponderance of evidence, and cannot satisfy it without clarification of its intent to “*Broadcast of financial, economic news and data through distribution of programs generally prepared on the basis of requests by clients*”.²⁶

²³ FCC 81-585 (1981), FCC 84-301 (1984)


²⁴ FCC 97-247 (1997), FCC 98-304 (1999)

²⁵ 32 FCC Rcd 9930 (2017) at § 9

²⁶ Permit Application, Exhibit 2, at document page 9

Objector hereby discloses affiliation with one of Part 5 applicants for experimental license for similar services, and as such, affiliation with a competitor of Turns.

Respectfully submitted,



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CERTIFICATE OF SERVICE

I certify that a copy of the foregoing Informal Objection has been served upon the following via electronic means this 3rd day of September 2020 to the following party:²⁷

Donald G Everist, P.E.
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/s/ Alex Pilosov

Alex Pilosov

²⁷ Budd Larner PC, the legal counsel listed on Turms Permit Application (FCC Form 309) is no longer in business, per <https://www.law.com/njlawjournal/2019/06/14/budd-larner-announces-july-closure/>